

# Achievement goals and motivational responses in tennis: Does the context matter?

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**Achievement Goals and Motivational Responses in Tennis: Does the Context  
Matter?**

## Abstract

*Objectives:* This study examined: (a) whether athletes' goal orientations differ across training and competition; (b) whether goal orientations predict effort, enjoyment, and psychological skill use differently in training and competition; and (c) whether goal orientations predict perceived improvement in training and perceived performance in competition.

*Method:* Participants were 116 competitive tennis players (mean age = 19.99,  $SD = 5.82$ ), who completed questionnaires measuring goal orientations, effort, enjoyment, and psychological skill use in training and competition, perceived improvement in training, and perceived performance in competition.

*Results:* Dependent *t*-tests revealed that athletes reported higher task orientation in training than in competition and higher ego orientation in competition than in training, while Pearson product-moment correlations revealed a high cross-contextual consistency for both task and ego goal orientations between training and competition. Regression analyses indicated that task orientation predicted positively effort, enjoyment, self-talk, and goal setting in both contexts, perceived improvement in training, and perceived performance in competition. An interaction effect also emerged whereby ego orientation predicted positively effort in competition only when task orientation was low or average.

*Conclusions:* The findings suggest that goal orientations may differ between training and competition; task orientation is the goal that should be promoted in both contexts; and the context may affect the relationship between goal orientations and effort, enjoyment, and goal setting.

## Introduction

According to achievement goal theory (Ames, 1992; Nicholls, 1989), individuals engage in achievement situations in order to develop or demonstrate competence. However, competence or ability can be construed in two different ways: it can be judged in relation to one's own effort and mastery or it can be construed as capacity (Nicholls, 1984, 1989). The two conceptions of ability form the basis for two distinct achievement goals: *task* and *ego involvement*. When individuals are task involved, they evaluate ability using self-referenced criteria and feel successful when they improve, learn something new, or master a task. In contrast, when they are ego involved, they evaluate ability using other-referenced criteria and feel successful when they establish superiority over others (Nicholls, 1989). Individuals have a proneness to the two types of involvement which are known as *task* and *ego orientations* (Nicholls, 1989).

Whether one is task or ego involved in a given achievement context also depends on situational factors with certain conditions promoting task or ego involvement. Specifically, tasks that are challenging or offer the opportunity for growth in competence, without salient task-extrinsic incentives and evaluative cues, are expected to promote task involvement (Nicholls, 1989). In contrast, evaluative, interpersonally competitive conditions, as well as those that induce public self-awareness should promote ego involvement (Nicholls, 1989).

To date, the vast majority of sport studies using the achievement goal framework have examined achievement goals in the general context of sport (Biddle, Wang, Kavussanu, & Spray, 2003). However, given that certain conditions are assumed to facilitate task versus ego involvement, it may be important to consider the two core sport sub-contexts<sup>1</sup>: *training* and

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<sup>1</sup> We refer to training and competition as “sub-contexts” when we discuss them in relation to the general context of sport. In all other cases, we refer to them as “contexts” for simplicity reasons and because the term sub-context seems relevant only when used to denote the relationship to a broader context. As our main purpose was to contrast the specific contexts of training and competition to each other rather than to the general context of sport, referring to them as contexts in all other cases seems appropriate.

*competition*. These contexts entail conditions that could promote task or ego involvement. Specifically, as an organised structure, training provides opportunities for athletes to practise and develop their skills, whereas competition is formally regulated to test these skills against other athletes. Although social comparison may occur in training, it is inherent in organised competition because objective success in this context is evaluated using normative criteria. Competition may also involve a stronger public evaluation compared to training due to the presence of spectators. These structural characteristics of training and competition may lead athletes to develop goal orientations that are specific to each context. These goal orientations represent the typical goal involvement that athletes experience in these two contexts.

To date, the question of whether goal orientations differ between training and competition has received very little research attention. In a study that examined this issue, athletes reported higher task orientation in training than in competition but did not differ in ego orientation between the two contexts (Tammen, 1998). Similar findings were reported in another study (Williams, 1998) that examined goal involvement, and found that female softball players were more task involved during practice/training than in game situations but did not differ in ego involvement (Williams, 1998). Finally, Harwood (2002) found that high-level athletes reported significantly higher ego and lower task orientation in the specific context of competition than in the general context of sport and recommended extending this line of research by examining dispositional tendencies in the specific training context. Taken together, the findings of these studies suggest that achievement goals may differ across training and competition and support the value of making this distinction.

To date, research examining goal orientations in sport has provided evidence that goals have implications for two important motivational responses: *effort* and *enjoyment/interest*. These variables have been positively associated with task orientation and unrelated to ego orientation in the general context of sport (Biddle et al., 2003). However, these relationships

may vary as a function of the specific contexts of training versus competition. Although each specific training session can vary in the extent to which it is task or ego-involving, in general, the purpose of organised training is to enable athletes to practise and improve their skills. Task-oriented individuals have an intrinsic interest and a desire to improve through effort (Nicholls, 1989), and therefore, task orientation may promote effort and enjoyment in this context. However, such relationships are not expected in this context for athletes who are high in ego orientation as in this context normative goal striving may be less strongly emphasized and is not formally rewarded (e.g., through rating and ranking systems etc.). Thus, ego orientation should be unrelated to effort and enjoyment in the training context.

In competition, different relationships between goals and motivational responses are expected. Specifically, during competition, athletes high in task orientation may exert effort because they are likely to achieve their self-referenced competition goals, for example personal bests. They may also experience enjoyment, as personal performance mastery has been identified as the most important source for athletes' enjoyment (Wiersma, 2001). Athletes with a high ego orientation may respond similarly with respect to effort in their striving to demonstrate normative superiority (Harwood & Hardy, 2001) as competition is the ideal context for these athletes to demonstrate their competence relative to others. Thus, ego orientation may promote effort in this context. It has been suggested that a positive effect of ego orientation on effort may be moderated by task orientation, such that high ego-oriented athletes may apply effort only when they also have high task orientation (Harwood & Hardy, 2001). Ego orientation may or may not lead to enjoyment depending on how athletes perform in comparison to others during competition.

Achievement goals have also been examined in relation to the use of *psychological skills*. Three psychological skills widely used in sport are goal setting, self-talk, and attentional control (Thomas, Murphy, & Hardy, 1999). These psychological skills are

regarded by coaches as important skills in tennis which is the sport on which we focus in this study (Gould, Medbery, Damarjian, & Laurer, 1999). Using cluster analysis to classify athletes in goal-profile groups, Harwood, Cumming, and Fletcher (2004) found that higher-task/moderate-ego athletes used goal setting and self-talk in both training and competition more often than lower-task/higher-ego and moderate-task/lower-ego athletes. Thus, task orientation was the critical goal regarding the use of goal setting and self-talk, and the two goals had similar effects on goal setting and self-talk in the two contexts. However, Harwood et al. (2004) did not examine whether goal orientations specific to training and competition are differentially related to the use of these two psychological skills in the two contexts.

Attentional control refers to selectively attending to and concentrating on relevant cues while disregarding irrelevant ones in order to best accomplish the goals of the task (Singer, Cauraugh, Murphey, Chen, & Lidor, 1991) and has not been investigated in relation to achievement goals in sport. However, concentration which is conceptually similar to attentional control and has been defined as excluding irrelevant thoughts from consciousness and tuning in to the task at hand (Jackson & Csikszentmihalyi, 1999) has been examined. Task orientation has been positively associated with concentration in sport and physical education contexts (e.g., Moreno, Cervello, & Gonzales-Cutre, 2008; Papaioannou & Kouli, 1999), whereas ego orientation has been either unrelated (Papaioannou & Kouli, 1999) or weakly related (Moreno et al., 2008) to concentration. However, no study has examined whether the relationship between goal orientations and the use of attentional control differs across organised training and competition. Research is needed to address this issue.

Finally, general sport goal orientations have been examined in relation to perceived improvement and performance in sport. Task orientation has been positively associated with perceived improvement, whereas ego orientation was unrelated to this variable in handball players (Balaguer, Duda, Atienza, & Mayo, 2002). The two goals have been unrelated to



perceived improvement in tennis players (Balaguer, Duda, & Crespo, 1999). With regard to perceived performance, task orientation has been positively related and ego orientation unrelated to perceived performance as measured over one match (Cervelló, Santos-Rosa, Calvo, Jiménez, & Iglesias, 2007), but the two goals were unrelated to perceived performance when it was assessed over a longer time period (i.e., ‘during the current year’; Balaguer et al., 2002). To date, no study has examined whether context-specific goal orientations are differentially related to perceived improvement in training and perceived performance in competition.

In sum, although the beneficial effects of task orientation in sport have been well established, making the distinction between training and competition could enhance our understanding of the motivational consequences of the two goals. The first purpose of this study was to examine whether tennis players’ goal orientations differ across training and competition. We focused on tennis because athletes in this sport typically compete head-to-head, which may evoke a stronger perception that one can be personally identifiable and publicly evaluated in competition, and subsequently a stronger increase in ego orientation from training to competition compared to team sport athletes (see Harwood, 2002). We hypothesized that athletes would report higher task orientation in training than in competition and higher ego orientation in competition than in training (Harwood, Hardy, & Swain, 2000; Williams, 1998).

The second purpose was to examine whether goal orientations predict effort, enjoyment, and psychological skill use differently in training and competition. We hypothesized that task orientation would positively predict all motivational responses in both contexts (Biddle et al., 2003; Harwood et al., 2004; Papaioannou & Kouli, 1999) and that ego orientation would be unrelated to these variables in training but would positively predict effort in competition (Harwood & Hardy, 2001). We made no predictions regarding ego orientation and enjoyment,

and psychological skill use, in competition. The third purpose was to examine the relationship between context-specific goals and perceived improvement and performance. We expected that task orientation would positively predict perceived improvement and performance and that ego orientation would be unrelated to these variables (Balaguer et al., 1999, 2002; Cervelló et al., 2007).

## **Method**

### **Participants**

Participants were 116 (94 males, 22 females) tennis players, recruited from 28 tennis clubs representing 16 counties of Great Britain. At the time of data collection, the players' age ranged from 16 to 40 years and their mean age was 19.99 ( $SD = 5.82$ ) years. They had been playing tennis competitively for an average of 8.52 ( $SD = 5.13$ ) years, with 90% having a minimum of 3 years of competitive tennis experience (Median = 8, Mode = 10). Their competition level varied from Club (43.5 %), County (13.9%), Regional (16.5 %), National (19.1 %), to International (7.0 %). Their individual playing standards ranged from a Lawn Tennis Association (LTA) rating of 10.2 (lowest) to 1.1 (highest), with a median of 7.1. At the time of data collection, participants' mean number of attended training sessions per week was 2.01 ( $SD = 1.16$ ), and the number of competitive ranking/rating matches they played in that year varied from 1 to 5 (44.6 %), 5 - 10 (12.5 %), 10 - 15 (10.7 %), 15 - 20 (2.7 %), to 20 or more (29.5 %).

### **Measures**

The questionnaire had two parts, one referring to the competition and one referring to the training context. The players were oriented toward the two contexts through written instructions (e.g., "Please think about your tennis experience in *training*, and respond honestly to the following statements..."). In addition, each individual questionnaire had explicit references to training or competition to ensure athletes were oriented to the specific context

when responding to the items. A similar procedure has been used in previous research that examined goal orientations in school and sport (Castillo, Duda, Balaguer, & Tomás, 2009; Duda & Nicholls, 1992).

**Goal orientations.** Athletes' goal orientations in training and competition were measured with the Perception of Success Questionnaire (POSQ; Roberts, Treasure, & Balague, 1998), which consists of two six-item subscales measuring task and ego goal orientations. Participants were asked when they feel most successful in the two contexts. For the training context, the stem was "In training, I feel most successful when...", and for the competition context, it was "In competition, I feel most successful when...". Examples of items were "I work hard" for task orientation, and "I am clearly superior" for ego orientation. Identical items were used for both contexts. Participants responded on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The POSQ has demonstrated satisfactory internal consistency with Cronbach's (1951) alpha coefficients of .90 for the task and .84 for the ego orientation subscale (Roberts et al., 1998). The mean for each subscale was computed and used in all analyses. This procedure was followed for all variables.

**Effort and enjoyment/interest.** Two subscales of the Intrinsic Motivation Inventory (IMI; Ryan, 1982) were used to measure effort (5 items) and enjoyment/interest (7 items) in the two contexts. Example items are: "I put a lot of effort into training/competition" and "I enjoy training/competition very much". Each item was rated on a Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). These subscales have demonstrated good reliability in previous research (effort  $\alpha = .84$ ; enjoyment/interest  $\alpha = .78$ ; McAuley, Duncan, & Tammen, 1989).

**Psychological skills.** The psychological skills of goal setting, self-talk, and attentional control were assessed using the relevant scale items from the Test of Performance Strategies (TOPS; Thomas et al., 1999). In the TOPS, attentional control is included only as a subscale

in the training context. However, we also assessed this variable in competition by using the items of the training subscale. The players were asked to indicate how often they used each skill in training/competition. Example items are: for goal setting, “I have very specific goals for training/competition sessions”; for self-talk, “I talk positively to myself to get the most out of training/competition”; and for attentional control, “during training/competition I focus my attention effectively”. Each subscale consists of four items rated on a Likert scale anchored by 1 (*never*) and 5 (*always*). Previous research has reported good reliability for these subscales with alpha coefficients ranging from .73 to .81 (Thomas et al., 1999).

**Perceived improvement in training.** This variable was measured with a 4-item scale (Balaguer et al., 1999) adapted to the training context. Participants were asked to assess the technical, tactical, physical, and mental aspects of their ‘skill improvement in training over the last year’. A year was used as time period, because the data were collected at the start of the new outdoor season, thus responses reflected perceived improvement over a complete outdoor- and indoor season. Responses were made on a Likert scale ranging from 1 (*about the same as one year ago*), 3 (*somewhat better than one year ago*) to 5 (*much better than one year ago*). In a previous study (Balaguer et al., 2002) the four items (together with a fifth item measuring perceptions of overall performance during the current year) were reported to be internally consistent ( $\alpha = .85$ ). In this study, we only used four items because they covered the four main aspects of improvement.

**Perceived performance in competition.** This variable was also measured with a 4-item scale used by Balaguer et al. (1999) to measure perceived improvement. We adapted this scale to measure performance by asking the players to assess the technical, tactical, physical, and mental aspects of their ‘performance in competition over the last year’. As with improvement, a year was used because the data were collected at the start of the new outdoor season, thus responses reflected perceived performance over a complete outdoor- and indoor

season. Response options were 1 (*poor*), 2 (*fair*), 3 (*good*), 4 (*very good*) and 5 (*excellent*).

Similar to the perceived improvement measure, we only used four items because they covered the four main aspects of performance.

## **Procedure**

Upon approval of the study by the University Ethics Committee, we identified tennis players who had experience in training (i.e., training with a coach) and competition (i.e., matches that count for their rating/and ranking) in tennis and were 16 years or older. Forty LTA licensed coaches were contacted via letter or e-mail and a subsequent phone call, and were asked for their help with the study. The general purpose of the study and procedure for data collection was explained to the coaches during the phone call. Questionnaires were sent to the consenting coaches by post ( $N = 18$ ) or delivered by the first investigator ( $N = 10$ ). The questionnaires were administered to the players by their coaches. We emphasized to all coaches both by a telephone conversation (or personal visit) and via written instructions that all players' responses should be kept confidential and revealed to no one including the coach. We also asked coaches to emphasize to their players that they should respond to all questions honestly. All coaches agreed to adhere to these procedures.

During data collection, players were informed of the study purposes by their coach verbally and by the information sheet attached to each questionnaire. It was emphasized that participation in the study was voluntary and players' responses would remain confidential. The coaches were asked to emphasize to their players to complete the training part of the questionnaire with their general training experience in mind and the competition part with their general competition experience in mind. Before completing the questionnaire, which took approximately 10-15 minutes to complete, the athletes signed a consent form. Parental consent was not necessary because in the United Kingdom where the study was conducted

parental consent is needed only under the age of 16 according to the Ethical Guidelines of the British Psychological Society.

## **Results**

### **Preliminary Analyses**

Prior to conducting the main analyses, the data were examined for missing values and outliers. Only 0.5% of the values were randomly missing, and these were replaced with the series mean. Outliers were examined using the standardised  $z$ -scores. Cases with scores in excess of 3.29  $SD$  from the mean were considered outliers (Tabachnick & Fidell, 2001). One outlier was identified, which was standardised by converting the outlier score to 3.29  $SD$  from the mean (Field, 2005).

### **Descriptive Statistics and Alpha Coefficients**

Descriptive statistics and alpha coefficients for all variables are presented in Table 2.1. It can be seen that participants reported a high task and moderately high ego orientation and high levels of enjoyment and effort in both contexts. They also reported using goal setting, self-talk, and attentional control with moderate frequency in both contexts. Finally, players reported moderate levels of improvement and performance during the previous year. All scales had good or very good levels of internal consistency.

### **Correlation Analyses**

Bivariate correlations were computed between all variables within each context and are presented in Table 2.2. Task and ego orientations were not related significantly in training, but were positively related in competition. Task orientation was positively related to effort, enjoyment, goal setting, and self-talk in both contexts, perceived improvement in training, and perceived performance and attentional control in competition. Ego orientation was positively linked to enjoyment and effort, in competition. Other notable findings were positive relationships among the three psychological skills, and a positive relationship between

perceived improvement and performance and the three psychological skills in both contexts. Finally, athletes' gender was positively related with task orientation in training ( $r = .19$ ;  $p < .05$ ) indicating that females were more task-oriented than males in this context. Correlation values of .10, .30, and .50 are considered small, medium, and large effect sizes, respectively (Cohen, 1992).

Table 2.1

*Descriptive Statistics and Alpha Coefficients for All Variables (N=116)*

Variables	Training				Competition			
	<i>M</i>	<i>SD</i>	Range	$\alpha$	<i>M</i>	<i>SD</i>	Range	$\alpha$
Task orientation	4.41	0.48	2.8 - 5.0	.74	4.20	0.61	2.3 - 5.0	.81
Ego orientation	3.50	0.79	1.5 - 5.0	.85	3.90	0.75	1.7 - 5.0	.87
Effort	5.71	0.93	3.4 - 7.0	.78	5.99	0.98	2.9 - 7.0	.81
Enjoyment/interest	5.29	0.89	2.7 - 7.0	.79	5.34	1.00	2.6 - 7.0	.83
Goal setting	3.11	0.84	1.0 - 5.0	.84	3.12	0.51	2.0 - 4.5	.78
Self-talk	3.29	0.84	1.0 - 5.0	.85	3.49	0.81	1.1 - 5.0	.80
Attentional control	3.36	0.74	1.0 - 5.0	.79	3.60	0.77	1.8 - 5.0	.83
Perc. Imp <sup>a</sup> /Perc. Perf <sup>b</sup>	3.40	0.99	1.0 - 5.0	.79	3.30	0.68	2.0 - 5.0	.71

*Note.* Perc. = perceived; <sup>a</sup> Imp = improvement, measured only in training; <sup>b</sup> Perf = performance, measured only in competition.

Table 2.2

*Bivariate Correlations among all Variables (N=116)*

	1	2	3	4	5	6	7	8	9
1. Task orientation		.40**	.44**	.53**	.28**	.31**	.19*	.31**	.06
2. Ego orientation	.14		.41**	.29**	.09	.11	.04	.17	.33**
3. Effort	.40**	.03		.60**	.09	.32**	.35**	.31**	.16
4. Enjoyment/interest	.20*	-.10	.58**		.24**	.41**	.47**	.38**	.17
5. Goal setting	.32**	-.03	.30**	.24**		.37**	.25**	.23*	.20*
6. Self-talk	.24**	.01	.32**	.24**	.39**		.35**	.45**	.19
7. Attentional control	.01	-.15	.49**	.40**	.28**	.37**		.38**	-.04
8. Perc. Imp <sup>a</sup> / Perc. Perf. <sup>b</sup>	.21*	.10	.28**	.34**	.27**	.43**	.30**		.02
9. LTA rating <sup>c</sup>	.24*	.25*	.16	.22*	.41**	.22*	.01	-.02	

*Note.* Correlations in training are presented below the diagonal, and those for competition above the diagonal; <sup>a</sup>Perc. = perceived; <sup>a</sup> Imp = improvement, measured only in training; <sup>b</sup>Perf. = performance, measured only in competition; <sup>c</sup>LTA rating,  $n = 98$ .

\*  $p < .05$ ; \*\*  $p < .01$ .



## **Context and Goal Orientations**

The first purpose of this study was to examine whether athletes' goal orientations differ across training and competition. We addressed this purpose using dependent *t*-tests and Pearson product-moment correlations. Participants reported significantly higher task orientation in training than in competition,  $t(115) = -4.52, p < .001$ , Cohen's  $d = .38$ , and significantly higher ego orientation in competition than in training,  $t(115) = 6.86, p < .001$ , Cohen's  $d = .52$  (see Table 2.1). Cohen's  $d$  represents the effect size of the difference in goal orientations between the two contexts, and values of .20, .50, and .80, constitute a small, medium, and large effect, respectively (Cohen, 1992). Thus, the difference between the two contexts was small-to-medium for task and medium for ego orientation. Correlations were large for task orientation ( $r = .62, p < .001$ ) and ego orientation ( $r = .66, p < .001$ ).

## **Context and the Relationships between Goals and Motivational Responses**

The second purpose of this study was to examine whether goal orientations predict effort, enjoyment, and psychological skill use differently in training and competition. To address this purpose, first we used hierarchical regression analyses to examine the effects of goals on motivational outcomes within each context; we investigated main and interaction effects. When we identified different results in the two contexts, we statistically compared the respective regression coefficients to determine whether the effects of goals on outcomes in the two contexts were significantly different from each other.

Two sets of hierarchical regression analyses, one for training and one for competition, were conducted in two steps using centred predictors (see Aiken & West, 1991). In the first step, the outcome variable was regressed on task and ego goals simultaneously to examine main effects of goals on motivational outcomes. In the second step, the outcome was regressed on the cross-product of task and ego to examine whether the two goals interact in predicting each outcome. The cross-product was computed from the centred predictors to

avoid non-essential multi-collinearity that might result from a high correlation between the first-order terms and the interaction terms (Cohen, Cohen, West, & Aiken, 2003). The two predictors were correlated in competition; therefore, we have also presented the squared semi-partial correlations ( $sr^2$ ), which express the unique contribution of each predictor to the total variance of each outcome (see Cohen et al., 2003; Tabachnick & Fidell, 2001). To protect against Type I error without increasing the risk of Type II error, we examined significance tests for individual regression coefficients only when the  $F$  test for the overall model for each regression step was significant (Cohen et al., 2003). First, we present the results for effort and enjoyment/interest followed by the results for psychological skills.

**Effort and enjoyment/interest.** Results of the regression analyses for effort and enjoyment/interest are presented in Table 2.3. In training, only main effects were found. The overall model was significant for effort,  $F(2, 113) = 11.00, p < .001$ , and enjoyment/interest,  $F(2, 113) = 3.53, p < .05$ . Task orientation predicted positively both variables, whereas ego orientation did not predict any variable. The amount of variance accounted for by the two predictors was medium-to-large for effort and small-to-medium for enjoyment (see Table 2.3). Values of .02, .13, and .26 for  $R^2$  are considered small, medium, and large effect sizes, respectively (Cohen, 1992). In competition, the overall model was also significant for effort,  $F(2, 113) = 19.18, p < .001$ , and enjoyment,  $F(2, 113) = 22.51, p < .001$ . Task orientation predicted positively both variables, while ego orientation predicted positively effort. The two predictors accounted for a large amount of variance in effort and enjoyment (see Table 2.3).

Table 2.3

*Regression Analyses: Goals predicting Effort and Enjoyment/interest (N=116)*

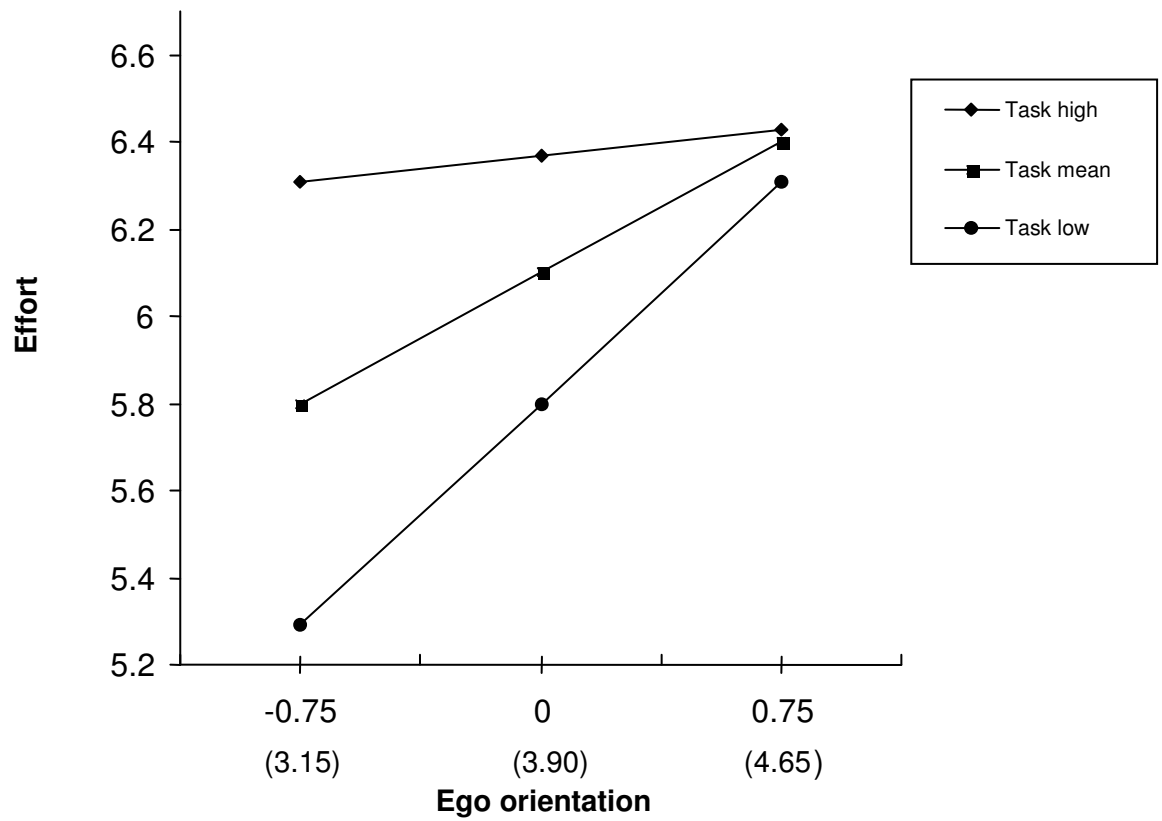
		Training						Competition					
Outcome		<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	$R^2_{unique}$	$sr^2$	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	$R^2_{unique}$	$sr^2$
<b>Effort</b>		.16						.25					
<i>Step 1</i>	Task	.79	.17	.41	4.68***		.16	.52	.14	.33	3.68***		.09
	Ego	-.04	.10	-.03	-0.34		–	.35	.11	.28	3.11**		.06
<i>Step 2</i>	Task x Ego	-.30	.19	-.14	-1.62	.02	.02	-.49	.16	-.25	-3.13**	.06	.06
<b>Enjoyment/interest</b>		.06 <sup>a</sup>						.29					
<i>Step 1</i>	Task	.41	.17	.22	2.38*		.05	.80	.14	.49	5.64***		.20
	Ego	-.15	.10	-.14	-1.47		.02	.13	.12	.10	1.10		.01

*Note.* <sup>a</sup> Cooperative suppression occurred ( $R^2$  is smaller than the sum of  $sr^2$ ); each predictor was stronger together with the other predictor than independently (for task,  $sr^2 = .02 > r^2 = .01$ ; and ego,  $sr^2 = .05 > r^2 = .04$ ). This occurs when the standardised regression coefficient ( $\beta$ ) of the predictors (i.e. task and ego) is greater than their zero-order correlation and both have the same sign; for task orientation both positive, and for ego orientation both negative (Cohen & Cohen, 1975).

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

The overall model was also significant for effort for step 2,  $F(3, 112) = 17.05, p < .001$ , indicating the presence of an interaction effect, which accounted for a small-to-medium amount of unique variance. For the interpretation of an interaction effect, Cohen et al. (2003) recommend to plot the regression of  $\hat{Y}$  on  $X$  at three levels of  $Z$  corresponding to one standard deviation ( $SD$ ) above the mean, the mean, and one  $SD$  below the mean of  $Z$ . Accordingly, the values of task orientation ( $Z$ ) chosen for plotting the regression of effort ( $\hat{Y}$ ) on ego orientation ( $X$ ) were 0.61, 0, and  $-0.61$ , reflecting high, mean, and low task orientation, respectively. These values were substituted in the regression equation ( $\hat{Y} = .47 X + .38 Z - .49 XZ + 6.10$ ), resulting in three simple regression equations, which were then plotted at three levels of ego orientation: one  $SD$  below the mean ( $-0.75$ ), the mean, and one  $SD$  above the mean ( $0.75$ ). The three simple regression lines are presented in Figure 2.1.

To examine whether the simple slopes were significantly different from zero, simple slope analyses were conducted (Aiken & West, 1991). These analyses showed that the slopes for low ( $b = .68, SE = .15, p < .001, t(112) = 4.50$ ) and mean ( $b = .39, SE = .11, p = .001, t(112) = 3.50$ ) task orientation were significantly different from zero, indicating that for athletes who had low or average levels of task orientation, ego orientation positively predicted effort, that is the higher the ego orientation of these players the more effort they exerted. However, the slope for high task orientation was not significantly different from zero, indicating that when task orientation was high, ego orientation did not predict effort. This interaction effect reflects an antagonistic pattern (Cohen et al., 2003), in which task and ego goals compensate for one another: For high task-oriented athletes, who already exert very high levels of effort in competition, ego orientation has no additional effect on effort; similarly, for high ego-oriented athletes, who already apply high effort in this context, task orientation has no effect.



*Figure 2.1.* Simple regression lines for effort in competition on ego orientation at three values of task orientation.

In order to investigate whether the relationships between goals and effort and enjoyment differed in the two contexts, we conducted a Z-test (Paternoster, Brame, Mazerolle, & Piquero, 1998) to statistically test whether the unstandardized regression coefficients for effort and enjoyment in training and competition were significantly different from each other. This test showed that the regression coefficients for ego orientation on effort ( $Z = 2.62, p < .01$ ) were significantly different, while the difference in the coefficients for task orientation on enjoyment/interest approached significance ( $Z = 1.77, p = .08$ ). The interaction effect found only in competition also supports the differential effects of the two contexts on effort. These findings suggest that the relationship between goals and effort and enjoyment may depend on the context in which these variables are measured.

**Psychological skills.** Results of the hierarchical regression analyses for goal setting, self-talk, and attentional control are presented in Table 2.4. Only main effects were significant in the two contexts, therefore only main effects are reported. In training, the overall model was significant for goal setting,  $F(2, 113) = 6.68, p < .01$ , and self-talk,  $F(2, 113) = 3.59, p < .05$ . Task orientation predicted positively both variables, whereas ego orientation did not predict any variable. The two predictors explained a small-to-medium amount of variance in goal setting and self talk. In competition, the overall model was significant for goal setting,  $F(2, 113) = 4.73, p = .01$ , and self-talk,  $F(2, 113) = 6.01, p < .01$ , both of which were positively predicted only by task orientation. The amount of variance explained in this step was also small-to-medium. The overall model for attentional control was not significant,  $F(2, 113) = 2.26, p = .11$ . The Z-test showed that the difference in the unstandardized regression coefficients in the two contexts for task orientation on goal setting ( $Z = 1.84, p = .07$ ) approached significance.

Table 2.4

*Regression Analyses: Goals predicting Psychological Skills (N=116)*

		Training						Competition					
Outcome		<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	$R^2_{unique}$	$sr^2$	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	$R^2_{unique}$	$sr^2$
<b>Goal setting</b>						.11						.08	
<i>Step 1</i>	Task	.57	.16	.33	3.64***		.10	.24	.08	.29	2.89**		.07
	Ego	-.08	.10	-.08	-0.85		.01	-.01	.07	-.02	-0.19		–
<b>Self-talk</b>						.06						.10	
<i>Step 1</i>	Task	.43	.16	.25	2.68**		.06	.41	.13	.31	3.23***		.08
	Ego	-.03	.10	-.03	-0.32		–	-.01	.10	-.01	-0.12		–
<b>Attentional Control</b>						.02						.04	
<i>Step 1</i>	Task	.06	.14	.04	0.39		–	.26	.13	.21	2.08* <sup>a</sup>		.04
	Ego	-.15	.09	-.16	-1.69		.02	-.04	.10	-.04	-0.43		–

*Note.* <sup>a</sup> *F* for this regression set was not significant; i.e., the *t*-test for this regression is not protected from type I error at 0.5 (see Cohen et al., 2003).

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

## Goals and Perceived Improvement and Performance

The third purpose of the study was to examine whether goal orientations predict perceived improvement in training and perceived performance in competition and was examined using regression analysis. The overall model was marginally significant for perceived improvement,  $F(2, 113) = 2.95, p = .056$ , and significant for perceived performance,  $F(2, 113) = 6.11, p < .01$ . Task orientation positively predicted perceived improvement ( $b = .41, SE = .19, \beta = .20, t = 2.17, p < .05; R^2 = .05, sr^2 = .04$ ) and perceived performance ( $b = .32, SE = .11, \beta = .29, t = 2.95, p < .01; R^2 = .10, sr^2 = .07$ ), while ego orientation did not predict either variable. The amount of variance in the two variables accounted for by task and ego orientation was small-to-medium.

## Discussion

To date, the effects of goal orientations on a variety of motivational responses have been typically examined in the general context of sport, and research has revealed the beneficial effects of task orientation in this context (Biddle et al., 2003). However, athletes constantly make the transition between organised training and competition. These two core sub-contexts of sport could influence not only athletes' tendency to be task or ego involved within each context (see Harwood, 2002), but also the relationship between context-specific goal orientations and motivational responses.

## Context and Goals

The first purpose of this study was to examine whether athletes' goal orientations differ across training and competition. Participants reported higher task orientation in training than in competition supporting our hypothesis and findings of other studies that have examined the effects of the two contexts on goal orientation (Tammen, 1998) and goal involvement (Williams, 1998). Participants also reported higher ego orientation in competition than in training; although this finding supports our hypothesis, it is not consistent with studies that



have reported no difference in ego orientation and ego involvement between the two contexts (Tammen, 1998; Williams, 1998). The discrepancy between our findings and those of past research could be explained by athletes' levels of ego goals. The participants in our study and in Williams' (1998) study differed in their level of ego orientation/involvement. Our participants reported moderately high levels of ego orientation, whereas Williams' (1998) participants reported low levels of ego involvement (training,  $M = 2.22$ ,  $SD = .94$ ; competition,  $M = 2.11$ ,  $SD = .86$ , scale range: 1-5). Given that most of the participants in Williams' (1998) study did not endorse ego goals they may have been less likely to be ego involved in the competition game, which may explain the discrepancy in the findings between the two studies.

We also found high cross-contextual consistency for both task ( $r = .62$ ) and ego ( $r = .66$ ) goal orientations between training and competition, supporting previous research that has also found this consistency between the sport and school domains (Castillo et al., 2009; Duda & Nicholls, 1992). Thus, tennis players who evaluate success using self-referenced or normative criteria in training are more likely to use the same criteria to evaluate their success in competition. The large correlations between training and competition goal orientations suggest that these goals may be expressions of a general (i.e., higher order) tennis goal orientation. However, these correlations were *not* too high also suggesting that training and competition goals are sufficiently independent to merit separate examination. This finding has important implications for the measurement of achievement goals in sport: It indicates that measuring goal orientations in sport in general does not provide sufficiently sensitive information about the criteria athletes use to evaluate success in the specific training and competition contexts. Sport researchers need to keep this point in mind when measuring athletes' goal orientations.

## **Context, Goals, and Motivational Responses**

The second study purpose was to examine whether goal orientations predict effort, enjoyment, and psychological skill use differently in training and competition. Only task orientation positively predicted enjoyment/interest in both contexts. These findings are consistent with the results of past research (Biddle et al., 2003) and suggest that the relationship between task orientation and enjoyment is robust. Previous research has also shown that out of six sources of enjoyment, competence derived through the attainment of personal achievement standards is the most important source for an athlete's enjoyment, whereas competence derived through being better than others and gaining recognition from others is the least important source (Wiersma, 2001). This may explain why task orientation (i.e., the tendency to use self-referenced criteria to evaluate competence) predicted enjoyment in both contexts and why ego orientation (i.e., the tendency to evaluate competence using other-referenced criteria), was unrelated to enjoyment. There was also a tendency for stronger prediction in competition than in training, suggesting that task orientation may be more important for enjoyment in that context. However, this effect was only marginally significant and should be re-examined in future research.

Task orientation was a positive predictor of effort in both contexts, while ego orientation positively predicted this variable only in competition and only when athletes' task orientation was low or average. Thus, although task orientation is clearly the most beneficial goal for effort, the two goals may have compensatory effects (Cohen et al., 2003) in the competition context, that is, high levels in either goal may be sufficient for high effort in competition. It has been suggested that high ego-oriented athletes will apply effort in their striving to demonstrate normative superiority but may withhold effort in the absence of high task orientation (Harwood & Hardy, 2001). In our study, high ego-oriented players exerted high effort even when task orientation was low or average. Perhaps, ego-oriented athletes who

compete individually, as in singles tennis, strongly link the effort they put in a match with a direct gain in normative competence (e.g., ‘when I try to do better than my opponent I win the match’). That ego orientation predicted effort differently in the two contexts supports Nicholls’ (1989) suggestion that the meaning of effort may change between more learning-oriented (like training) and competitive conditions; it also supports making the distinction between the two contexts when examining the relationship between goal orientations and effort.

With respect to psychological skill use, task orientation was the only goal to positively predict goal setting and self-talk in the two contexts. In past research, athletes with a higher-task/moderate-ego goal profile used goal setting and self-talk more often in the two contexts compared to lower-task/higher-ego and moderate-task/lower-ego athletes (Harwood et al., 2004). Our findings extend this work by revealing how goal orientations that are *specific* to training and competition are related to the use of these two psychological skills in the two contexts, and suggest that task orientation is the key goal associated with the use of goal setting and self-talk in the two contexts. Harwood et al. (2004) have also argued that athletes high in ego orientation may also invest in psychological skills use to facilitate their goal of demonstrating normative competence, and therefore no differences would be expected in psychological skills use as a function of achievement goal orientation. However, our findings suggest that ego orientation is neither beneficial nor detrimental for these variables. There was also a tendency for a stronger prediction of goal setting by task orientation in training than in competition, which should be further examined in future research.

Attentional control was not predicted by either goal in either context. In past research, task orientation has predicted concentration, which is similar to attentional control, in physical education (Papaioannou & Kouli, 1999). The discrepancy in the findings could be explained by the different ways that attentional control and concentration were measured in the two

studies. Specifically, Papaioannou and Kouli (1999) measured concentration at a specific moment in time, that is, they asked participants to think about the drill that they just did. In contrast, we examined the effective use of attentional control in the general training and competition contexts. As different performance situations may place different demands on attentional control, it is possible that achievement goals have less implication for this psychological skill when examined at a more general level.

### **Goals and Perceived Improvement and Performance**

Task orientation positively predicted improvement in training. Previous research has also shown that this goal positively predicted players' perceived improvement in handball (Balaguer et al., 2002). Our findings extend this work to tennis and suggest that task orientation should be promoted if one wishes to enhance perceptions of improvement in training. However, as the overall model for improvement was marginally significant this finding must be interpreted with caution. Ego orientation was not related to perceived improvement, a finding consistent with previous research (Balaguer et al., 2002). Overall, these findings are consistent with Nicholls' (1989) proposition that task orientation should facilitate long-term involvement which is required to improve skills.

Only task orientation predicted positively perceived performance in competition. In past research, task orientation has been positively related to tennis players' perceptions of performance in one match (Cervelló et al., 2007), and football players' coach-rated performance at the start and over the course of the season (Van Yperen & Duda, 1999). The current study extends this work by identifying a relationship between goal orientations and perceived performance over a *long* time period. Our findings suggest that using self-referenced criteria to define success and evaluate competence is more likely to lead to high performance in competition as perceived by the athlete. In contrast, using normative criteria to evaluate success has no impact on perceived performance in competition.

## **Limitations of the Study and Directions for Future Research**

Although our research revealed some interesting findings, it also has some limitations which need to be considered when interpreting the findings. First, the study was cross-sectional, thus firm assertions about the direction of causality cannot be made. Experimental studies are needed to confirm the direction of causality in the relationships that we found. For example, researchers could assign participants in pairs to training (i.e., instruct them to practise a motor skill) followed by competition (i.e., ask them to compete with each other on the skill they practised) conditions and examine how achievement goals change from the one condition to the other. Second, all study participants were British tennis players and most of them were males; thus, our findings can be generalized only to a similar population. Future research should replicate the present findings in other sports and countries using a larger number of female athletes. Third, the order of presentation of the questionnaires was not counterbalanced. Future research should replicate the current findings by varying the order of questionnaires. Finally, researchers could examine whether perceived ability moderates the relationship between ego orientation and outcomes in the two contexts thereby fully testing Nicholls' (1989) predictions about the moderating role of perceived ability. We did not examine this issue because empirical research has offered limited support for these predictions (see Biddle et al., 2003; Elliot, 1999; Morris & Kavussanu, 2009).

## **Conclusion**

In conclusion, our findings suggest that the two core sub-contexts in sport - training and competition - may influence tennis players' tendencies to be task or ego involved within each context. Our findings also indicate that task orientation is the goal that should be promoted and maintained in both contexts, and that the context may have some influence on the relationship between goal orientations and motivational outcomes. Moreover, task and ego orientation compensate for each other in their prediction of effort in competition. These

findings may provide practitioners with insights to optimise athletes' motivation in the training and competition contexts.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.
- Ames, C. (1992). Achievement goals, motivational climate, and motivational processes. In G. C. Roberts (Ed.), *Motivation in Sport and Exercise* (pp. 161-177). Champaign, IL: Human Kinetics.
- Balaguer, I., Duda, J. L., Atienza, F. L., & Mayo, C. (2002). Situational and dispositional goals as predictors of perceptions of individual and team improvement, satisfaction and coach ratings among elite female handball teams. *Psychology of Sport and Exercise*, 3, 293-308.
- Balaguer, I., Duda, J.L., & Crespo, M. (1999). Motivational climate and goal orientations as predictors of perceptions of improvement, satisfaction and coach ratings among tennis players. *Scandinavian Journal of Medicine and Science in Sports*, 9, 381-388.
- Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science*, 3, 1-20.
- Castillo, I., Duda, J. L., Balaguer I., & Tomás I. (2009). Cross-domain generality of achievement motivation across sport and the classroom: the case of Spanish adolescents. *Adolescence*, 44, 569-580.
- Cervelló, E., Santos-Rosa, F., García Calvo, T., Jiménez, R., & Iglesias, D. (2007). Young tennis players' competitive task involvement and performance: the role of goal orientations, contextual motivational climate, and coach-initiated motivational climate. *Journal of Applied Sport Psychology*, 19, 304-321.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.

- Cohen, J., & Cohen, P. (1975). *Applied multiple regression/correlation for the behavioral sciences*. New York: Wiley.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression / correlation analysis for the behavioral sciences* (3rd ed.). London: Lawrence Erlbaum Associates.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*, 297-334.
- Duda, J.L., & Nicholls, J.G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology*, *84*, 290-299.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169-189.
- Field, A. (2005). *Discovering statistics using SPSS* (2nd edition). London: Sage.
- Gould, D., Medbery, R., Damarjian, N., & Laurer, L. (1999). A Survey of mental skills training knowledge, opinions, and practices of junior tennis coaches. *Journal of Applied Sport Psychology* *11*, 28-50.
- Harwood, C. G. (2002). Assessing achievement goals in sport: Caveats for consultants and a case for contextualization. *Journal of Applied Sport Psychology*, *14*, 106-119.
- Harwood, C. G., Cumming, J., & Fletcher, D. (2004). Motivational profiles and psychological skills use within elite youth sport. *Journal of Applied Sport Psychology*, *16*, 318-332.
- Harwood, C. G., & Hardy, L. (2001). Persistence and effort in moving achievement goal research forward: A response to Treasure and colleagues. *Journal of Sport & Exercise Psychology*, *23*, 330-345.
- Harwood, C. G., Hardy, L., & Swain, A. (2000). Achievement goals in sport: A critique of conceptual and measurement issues. *Journal of Sport & Exercise Psychology*, *22*, 235-255.



- Jackson, S.A., & Csikszentmihalyi, M. (1999) *Flow in sports*. Human Kinetics, Champaign, IL.
- McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*, 60, 48-58.
- Moreno, J.A., Cervelló, E., & González-Cutre, D. (2008). Relationships among goal orientations, motivational climate and flow in adolescent athletes: Differences by gender. *The Spanish Journal of Psychology*, 11, 181-191.
- Morris, R. L., & Kavussanu, M. (2009). Approach-avoidance achievement goals in sport: Psychological correlates and a comparison with the dichotomous model. *International Journal of Sport & Exercise Psychology*, 9, 185-202.
- Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, 91, 328-346.
- Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, Massachusetts: Harvard University Press.
- Papaioannou, A. G., & Kouli, O. (1999). The effect of task structure, perceived motivational climate and goal orientation on students' task involvement and anxiety. *Journal of Applied Sport Psychology*, 11, 51-71.
- Paternoster, R., Brame, R., Mazerolle, P., & Piquero, A. (1998). Using the correct statistical test for the equality of regression coefficients. *Criminology*, 36, 859-866.
- Roberts, G. C., Treasure, D. C., & Balaguer, G. (1998). Achievement goals in sport: The development and validation of the Perception of Success Questionnaire. *Journal of Sports Sciences*, 16, 337-347.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43, 450-461.

- Singer, R.N, Cauraugh, J.H. Murphey, M, Chen, D., & Lidor, R. (1991). Attentional control, distractors, and motor performance. *Human Performance*, 4, 55-69.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston, MA: Allyn & Bacon.
- Tammen, V.V. (1998). Changes in task and ego goal orientations in relation to training of competitive situations. *Journal of Sport & Exercise Psychology*, 20 (Suppl.), S120.
- Thomas, P. R., Murphy, S. M., & Hardy, L. (1999). Test of performance strategies: Development and preliminary validation of a comprehensive measure of athletes' psychological skills. *Journal of Sports Sciences*, 17, 697-711.
- Van Yperen, N. W., & Duda, J. L. (1999). Goal orientations, beliefs about success, and performance improvement among young elite Dutch soccer players. *Scandinavian Journal of Medicine and Science in Sports*, 9, 358-364.
- Wiersma, L. D. (2001). Conceptualization and development of the Sources of Enjoyment in Youth Sport Questionnaire. *Measurement in Physical Education and Exercise Science*, 5, 153-177.
- Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise and Sport*, 69, 47-57.